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ABSTRACT

The University of California San Diego (UCSD) Libraries User Survey was designed to have its results in machine-readable form. Library management, anticipating the need for detailed statistics for future decision making, required that the survey results be manipulatable by library managers. Responses to the 1996 use survey were solicited from three primary user categories: undergraduates, graduate students, and faculty. The data is accessible through an interactive website, and allows universal access from any individual's desktop. The user survey website features: interactive query-based access from Web forms; formatted tables; analytical functionality including cross-tabs and graphing; and data file format export capabilities. Survey responses can be considered against a number of variables, including gender, year in school and major for students, and department and number of years at the university for faculty. The paper describes the design of HTML forms, output files, programming, and data application. The majority of the paper provides a detailed example of use of the survey data by a hypothetical branch manager assessing usage in relation to library hours. (Contains 12 references.) (SWC)

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The Universe at Your Fingertips: Continuing Web Education

April 25, 1997 University Center University of California Santa Barbara

Survey Data on Your Desktop; The Future for Library Managers

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Abstract

The UCSD Libraries User Survey was designed to have its results in machine-readable form. Library management, anticipating the need for detailed statistics for future decision making, required that the survey results be manipulatable by library managers. To accomplish this goal, the survey had to be designed in a particular way and subsequently, programming skills were needed to create an interactive website. The results allow individual responses to be considered against a number of variables including but not limited to gender, year in school and major for students; department and years at the university for faculty. Branch managers can review answers dealing specifically with their services or operations. More importantly, for the first time ever, this type of data is available on the individual's desktop allowing universal access for anyone interested in the information. Plans call for a repeat of this survey in the future, but the 1996 UCSD Libraries User Survey solicited responses from three categories of primary users: undergraduates, graduate students, and faculty.

Discussion

In 1995 as part of a larger undertaking of organizational change, the UCSD Libraries decided to conduct a user survey of its primary clientele-- faculty, students and staff. Subsequently, a nine member library-wide user survey team and a consultant from the business community were empowered to administer the entire process.

The process took the better part of a year and in the end we had survey results in

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machine-readable form. It was the intent of library management that this numeric data be used by library department heads and unit managers in making future managerial decisions.

In the last weeks of the survey process, the Libraries User Survey Team involved members of the Data Services Group in the project. The original request to the Data Services Group was for assistance in housing and archiving the data, providing access to it, and most importantly, according sub-setting capabilities by primary library.

The simplest solution to all our requests, would have involved putting the data files on the web in ASCII format. The Data Services group however, chose to go beyond this simple implementation by providing the same functionality for the *survey data* that it provides in its other web-based data projects. They welcomed the opportunity to show-case new and enhanced retrieval powers and ease-of-use features. Additionally, they wanted to meet the needs of library managers whose specific branch level questions could not be answered in sufficient detail by the pre-formatted charts and tables already available on the User Survey Website (http://orpheus.ucsd.edu/survey). To that end, they expanded the project's definition to include the following: interactive query-based access from WWW forms, formatted tables, analytical functionality including cross-tabs and graphing, and lastly, data file format export capabilities.

Interactive Access and Analysis of Data via the WWW

Server-side analysis of data is a new feature that the Data Services group is providing with some web-based data projects. Traditionally the library has provided the data expecting the end-users to do their own analysis (client-side analysis). Given that we can not anticipate all the analysis needs users will have this is still the most important role for Data Services. Taking advantage of the tools available for the WWW and current computing technologies this traditional service has been expanded to provide limited interactive analysis capabilities (server-side analysis). Server-side analysis allows users the ability to answer simple data questions quickly and easily as well as providing data exploration tools to those users who have more complex questions. In the long run we believe that these features will result in greater access to our data collection.

Design of HTML Forms

The Library User Survey data sets included a relatively small number of variables that were well documented by the consultant. This allowed us the luxury of turning the codebooks into the HTML query forms and freeing us from spending a lot of time developing the user-interface. The codebooks included the text of the questions creating simple, user-friendly interfaces from which to make interactive queries.

SAS data sets were created for each group surveyed from SAS export files provided by the consultant. Two HTML forms are available for each data set. The ***Analyze/ChartData*** form provides server-side analysis features where charts and tables are created *on-the-fly*. The ***Download/Subset*** menu can be used to subset the data for client-side analysis with spreadsheet or statistical software.

Server-side Analysis	Client-side Analysis
• Charts • Tables • Limited choice	• Subset • Download • Export format • Full-access

The ***Analyze & Chart Data*** menus require a primary analysis variable preselected from the table below. Part II of the menus allows the user to select one variable from any in the dataset to compare against the primary variable.

Undergraduate Student Menu	Faculty/Graduate/Medical Student Menu
• Primary Library • Sex of Respondent • Major Field • Class Level • College	• Primary Library • Major Field • Title • Sex of Respondent

Variable names and values are embedded into the forms using the **input** tag as

<input type=radio name=keep value=hours>Library hours

When the **submit** button is pressed the **CGI** program will be called with the browser passing to it the selected variable names and values. The program will extract the data from the **SAS** data set and output a chart and table comparing the two variables.

Output Files

Analysis Menu *(Server-side analysis)*

The output from the ***Analysis Menu*** displays a graphic comparison of the two variables as well as a table representing the numeric values and percentages of the two variables selected by the user.

> **Output charts and tables** are quickly and easily available through the intra/internet to administrators and public service providers within the library. They can be used to answer simple questions or to be printed and included in reports.

Subset menu *(Client-side analysis)*

Output files created from the ***subset menu*** reside on the server's disk for approximately one-half hour. Export files are available through FTP links that are output to the browser

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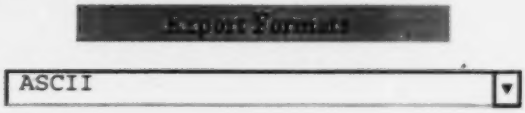
and have specific extension names. With proper configuration of the user's browser these files can be launched directly into spreadsheet and statistical programs. Otherwise they can be downloaded to disk *(without actually being read by the browser)* and then read into the appropriate software program.



An HTML link to a *formatted ASCII table* of the numeric data in a human-readable form is also provided.

Programming

The **CGI** program called by all of the *Survey* HTML forms is written in **PERL**. It calls the **SAS** data engine which subsets and extracts the data from the **SAS** data sets. **SAS** functions are called to cross-tab, format and chart the results. *Export* functionality is provided through the add-on product **DBMS Copy.**

CGI	SAS
• Parse variables and preferences from HTML form • Build SAS command script • Run SAS script • Output HTML links to files *(client-side)* • Output chart and table *(server-side)*	• Extract data • Analyze data • Create output files • Call DBMS export routines

The CGI and SAS scripts being used for data access are still evolving. The Library Survey data project provided a simple, elegant set of data to work with to add to our library of routines. Many of the routines used had already been developed for earlier projects allowing us to develop this system in a short period of time. The routines developed for the Library Survey have proved very useful in more recent development projects such as The General Social Survey.

Data Applications

Once the Data Services group completed its work, all library managers and staff were encouraged to review the survey results. Much of the overall general information seemed to confirm comments that had been received via the suggestion box, ie., the temperature of the building was too cold. Specific operational units, however, found the detailed statistics to be most useful. Operations like Inter-library loan and Library Express now had detailed insights to specific patron needs and concerns. It is beyond the scope of this presentation to describe specific UCSD responses to the survey. The authors have instead chosen to illustrate using survey data as a process of decision making by a hypothetical

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branch manager.

A management issue: Library Hours

All libraries today are struggling with the issue of library hours. Except for a few academic institutions that are able to keep their libraries open around the clock, most of us provide less than 24 hours per day of access to building collections. In one student focus group we conducted, we learned that our undergraduates wanted library buildings to be open longer hours, preferably into the early hours of the morning. Since our campus has nine library branches, satisfying this particular user request would not be simple or cheap.

Keeping library buildings open longer involves more than just paying an additional heating or lighting bill. Even if services are scaled to a minimum, additional staff is needed to insure the safety and security of patrons in very large buildings. The vigilance provided by library staff during the day, is not available nights and hence many libraries hire additional security staff. This added staffing need means more payroll dollars. Even if our branch managers wanted to keep their buildings open later, they could not make that decision without understanding the budgetary impact of such a move.

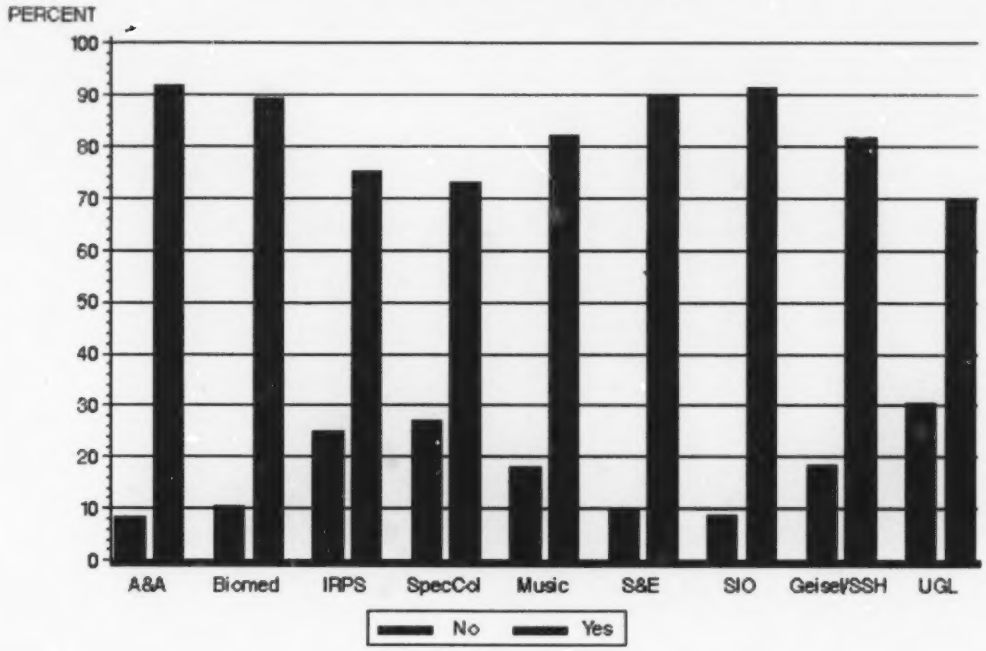
In addition to the fiscal issue, there are numerous other questions to be asked. Do we need to keep all the buildings open longer or is it possible to satisfy this request by extending the hours at only one building? Was this an issue for graduate students as well? Maybe more importantly, did the faculty want longer hours at specific branches?

It is at this stage that the work done by the Data Services Group becomes invaluable and directly applicable. By retrieving the answers to survey questions provided by our three user groups (*undergraduate, graduate /SOM, and faculty*) the library manager can determine which branch libraries are candidates for a change in hours.

One of the best quantified survey results, indicates that the majority of our undergraduates use libraries as places to study.

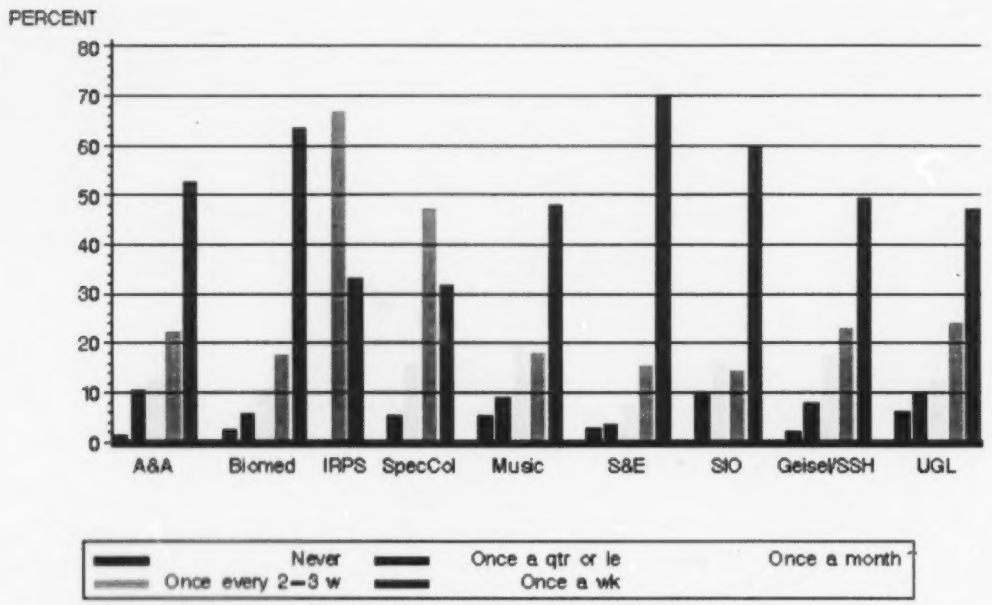
Library User Survey —— Undergraduate Data

UCSD as a place to study



Library User Survey —— Undergraduate Data

Often use as place to study



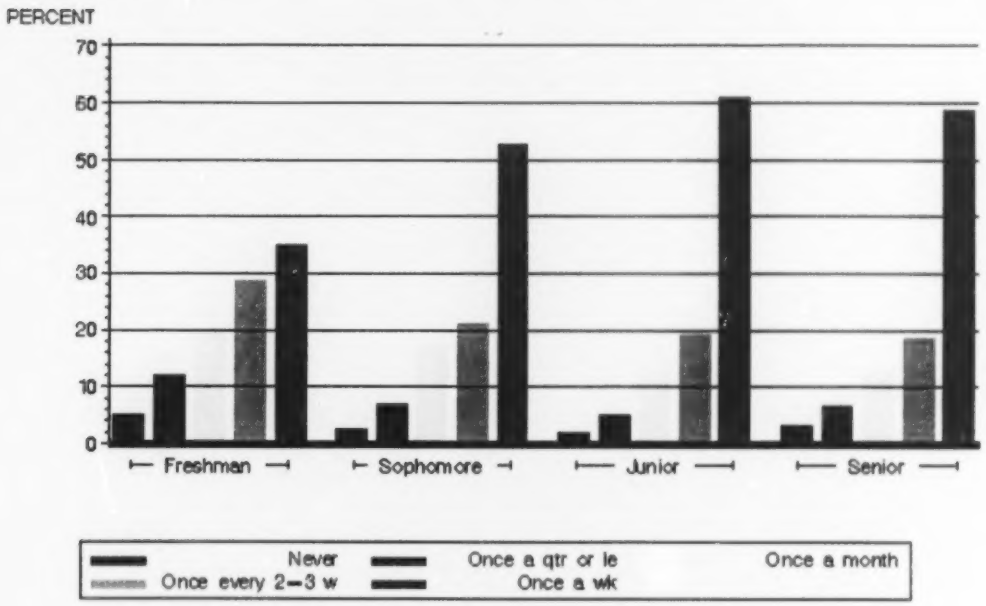
The graph immediately above indicates library usage on the average of once per week for all branches except IRPS (International Relations/Pacific Studies) and Special Collections. That is consistent with the fact that the IRPS library has as its primary users, graduate students and faculty. Special Collections on our campus is primarily an archive and a rare book collection rather than a normal study space for students. The heaviest used study libraries appear to be the science libraries: the Science & Engineering, the BioMedical library, and the Scripps Institute of Oceanography Library.

By combining the fuchsia bar (once a wk) with the green bar (once every 2-3 wks), one can see that better than eighty percent of the sampled students study in campus libraries regularly . The fact that a very small percentage of students never study at UGL (the Undergraduate Library) is interesting since all undergraduate reserves are housed at UGL. It may be because many UCSD classes now have students purchasing class readers [a compilation of photocopies articles] rather than placing materials on reserve.

The graph below shows that more than one half of the sophomores, juniors and seniors study at a library once a week (fuchsia bar). This data supports the information in the previous graph that students are making heavy use of UCSD libraries as places to study.

Library User Survey —— Undergraduate Data

Often use as place to study

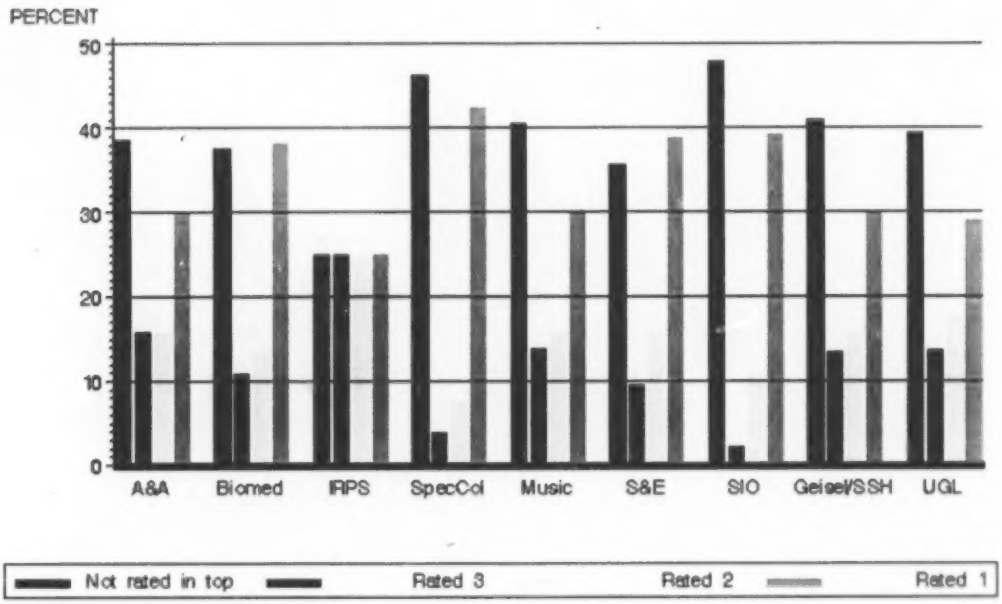


Now that the question about whether students are really using the library is clearly established, the branch manager needs to document the request for longer hours.

Running a data analysis on the Undergraduate population against the choice of longer hours on the question of which future service or resource they wanted the UCSD libraries to offer, gives us the following table.

Library User Survey —— Undergraduate Data

Library hours



The most obvious thing about this chart is the overall dominance of the blue bar indicating that longer hours was not one of the top three choices for a large percentage of students. The green bar (indicating a ranking of 1, hence of highest priority) is the next largest response.

Since the issue of library hours had come up in focus group discussions and in early survey design sessions, the consultant specifically decided to ask a "which longer library hours" question on the survey. The students were asked to choose all that applied; longer library hours: weekdays, longer library hours: weekends, longer library hours: holidays. The next three graphs show their answers.

Tables of hour preferences by weekday, weekend and holiday.
[http://ssdc.ucsd.edu/mmf/libex/week.html]

The request for longer weekday hours applies to all branches with the exception of Special Collections and IRPS (International Relations/Pacific Studies) which is consistent with what we already know. The last graph shows that students want longer weekend hours at all the branches with the exception of IRPS.

And what was the students response regarding longer holiday hours.? Well at least this is clear. Students, no more than staff, want to come to the library on holidays.

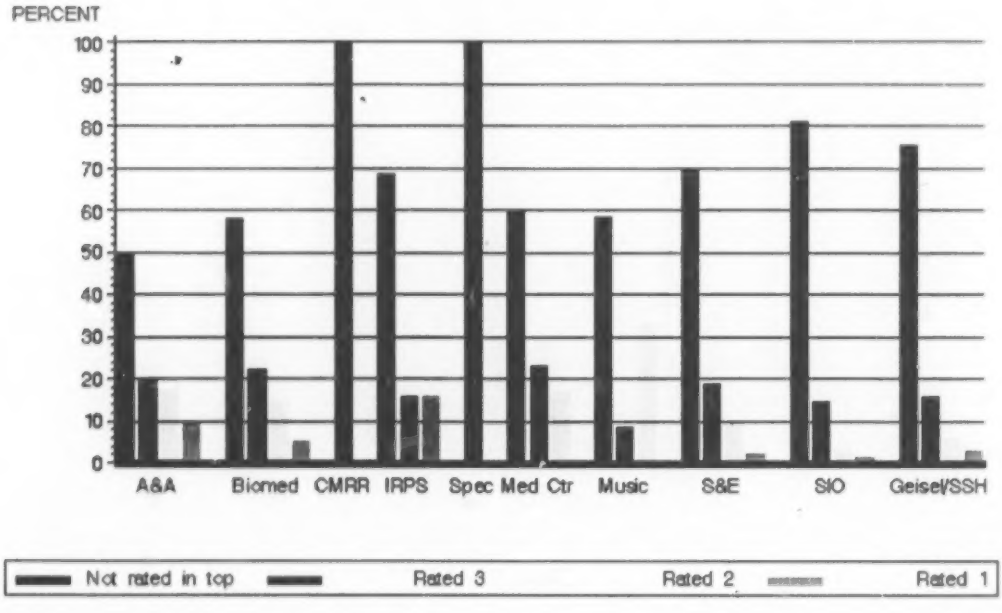
Now that the issue of library hours is well documented in terms of the Undergraduates,

are these opinions shared by graduate students and faculty. It will certainly be easier for branch managers to make a case for increasing library hours if they can be shown that all three primary user groups provided the same feedback.

The graph below shows the graduate students and faculty responses on longer library hours. This table does not tell us the reason for these responses but clearly the faculty and graduate students are not in agreement with the undergraduates.

Library User Survey —— Faculty & Graduate Data

Library hours



This is certainly a problem for making a case for longer library hours. The larger question however is why the difference between these groups.

Now granted, faculty don't study at the library and with electronic access and document delivery (called Library Express on our campus), perhaps they no longer come to the library. But surely, graduate students must be studying in the library. After some serious review of the survey data, additional clues about faculty and graduate student use of the library comes to light.

The two graphs below shows the frequency with which the UCSD faculty access libraries from their home or office. The first graph indicates frequency of usage by various titles and the second one is by their department.

Tables of Faculty Access of Libraries
[http://ssdc.ucsd.edu/mmf/libex/facaccess.html]

The first graph suggests that faculty at the lower ranks don't access the library electronically as often as their seniors. Now this data doesn't tell us why, but we could speculate that it might be because their don't have the resources either in the offices or at home. The fact that better than 50 percent of the Associate Professors log in 2 or more times a week is interesting. Taking the three professional ranks together, it's quite amazing at how actively our faculty access the library. This is information library managers did not know prior to the survey being taken. If a large number of faculty access the library remotely, then it makes sense that library hours are not a major issue for this group.

The second graph shows the information from a different point of view. It's quite apparent that graduate students and faculty using the CMRR Library and Special Collection don't have an issue with library hours. CMRR is the Center for Magnetic Recording a library facility used primarily by faculty and researchers. It would appear however, that percent of the polled faculty from the Scripps Institution of Oceanography and those who primarily using the Art and Architecture library, would like longer hours.

Does this suggest that faculty never come into the library any more? Not at all. When you combine the more than 2 times per week with the once a week percentiles in the graph, it shows that better than one half of the faculty still visit in person every week. From our knowledge of library patron behavior, it would be easy to assume that a fair number of quick look-ups are now done on-line (instead of calling the reference desk) and trips to the library are reserved for larger and more complex needs. If such library usage by faculty is an increase over previous years, we do not know that at this time. The 1996 survey will be our benchmark for future data gathering.

So how did graduate students and students in the School of Medicine use the library and did they want longer hours? The tables below show the answers.

Tables of Faculty/Grad (SOM) usage of library
[http://ssdc.ucsd.edu/mmf/libex/faculty.html]

It appears that graduate students in all disciplines use the library frequently. Adding the fuchsia line with the green line indicates that better than 50 percent use the library weekly.

Conclusions

The user survey information available to our hypothetical branch manager as a result of our 1996 efforts, has provided a sufficient amount of information to make recommendations to the library administration. For the first time every, he/she has the hard data to substantiate the need to increase library hours at specific branches. Even better, this information was easily obtainable from their own desktop.

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